

**THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
CENTRAL STATISTICAL AGENCY**

**AGRICULTURAL SAMPLE SURVEY
2006 / 2007 (1999 E.C.)**

(September – December 2006)

VOLUME I

REPORT ON

AREA AND PRODUCTION OF CROPS

(PRIVATE PEASANT HOLDINGS, MEHER SEASON)

Addis Ababa
July, 2007

388

STATISTICAL BULLETIN

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ABBREVIATIONS: CV – COEFFICIENT OF VARIATION

E.C. – ETHIOPIAN CALENDAR

S.N.N.P.R. – SOUTHERN NATIONS, NATIONALITIES AND PEOPLES' REGION

PART I

INTRODUCTION AND OBJECTIVES OF THE SURVEY

1.1. INTRODUCTION

The sound performance of agriculture warrants the availability of food crops. This accomplishment in agriculture does not only signify the adequate acquisition of food crops to attain food security, but also heralds a positive aspect of the economy. In regard to this, collective efforts are being geared to securing agricultural outputs of the desired level so that self reliance in food supply can be achieved and disaster caused food shortages be contained in the shortest possible time in Ethiopia.

The prime role that agriculture plays in a country's political, economic and social stability makes measures of agricultural productions extremely sensitive. Statistics collected on agricultural productions are, therefore, fraught with questions of reliability by data users. To tackle these questions convincingly and dissipate the misgivings of users, information on agriculture has to be collected using standard procedures of data collection.

Upholding this principle, the Central Statistical Agency (CSA) has been furnishing statistical information on the country's agriculture since 1980/81 to alert policy interventionists on the changes taking place in the agricultural sector. As part of this task the 2006/07 (1999 E.C) Agricultural Sample Survey (AgSS) was conducted to provide data on crop area and production of crops within the private peasant holdings for Meher Season of the specified year. The survey results are presented in this bulletin and other electronic media for data users.

The report comprises three parts. Part I contains the objectives of this annual survey. Part II deals with coverage of the survey, sample design, field organization and method of data collection and Part III includes the survey results. Estimation procedures and formulation of estimates of totals, ratios and variance are presented in Appendix I. Estimates of the standard errors with the corresponding coefficients of variations for area and production of crops are presented in Appendix II. The numbers

of agricultural households covered, number of parcels and fields measured are presented in appendix III and the survey questionnaires in Appendix IV.

1.2. OBJECTIVES OF THE SURVEY

The general objective of CSA's Agricultural Sample Survey (AgSS) is to collect basic quantitative information on the country's agriculture that is essential for planning, policy formulation, monitoring and evaluation of mainly food security and other agricultural activities. The AgSS is composed of four components: Crop Production Forecast Survey, Meher Season Post Harvest Survey, Livestock Survey and Belg Season Survey.

The specific objectives of Meher Season Post Harvest Survey are to estimate the total crop area, volume of crop production and yield of crops for Meher Season agriculture in Ethiopia. The report is based on private peasant holdings in rural sedentary areas of the country and part of companion reports on the performance of agriculture in the country. The report is compiled at regional and zonal level.

PART II

SURVEY METHODOLOGY, DATA COLLECTION AND PROCESSING

2.1. SCOPE AND COVERAGE OF THE SURVEY

The range of data items that the 2006/07 (1999 E.C) Annual Agricultural Sample Survey (Meher Season) dealt with includes all cereals, pulses and oilseeds and the most commonly grown vegetables, root crops and permanent (perennial) crops. Holders growing at least one or more of these and / or other crops are enumerated and data on crop area and yield condition recorded, hence data on production of these crops acquired.

The 2006/07 (1999 E.C) Annual Agricultural Sample Survey (Meher season) covered the entire rural parts of the country except Gambella Region, and the non-sedentary population of three zones of Afar & six zones of Somali regions. Accordingly, the survey took into account all parts of Harari, Addis Ababa, Dire Dawa, and 61 additional Zones / Special weredas (that are treated as zones) of other regions.

To be covered by the survey, a total of 2,117 enumeration areas (EAs) and 250 resettlement localities were selected. However, due to various reasons that are beyond control, in 22 EAs and 2 resettlement localities the survey was disrupted. Thus, all in all the survey succeeded to cover 2,095 EAs and 248 resettlement localities (98.99%) throughout the regions. The Annual Agricultural Sample survey (Meher season) was conducted on the basis of 20 agricultural households selected from each EA/resettlement locality. Regarding the ultimate sampling units, it was intended to cover a total of 48,300 agricultural households, however, 46,702 (96.69%) were actually covered by the survey.

2.2 SAMPLING FRAME

The list containing EAs of all regions and their respective agricultural households obtained from the 2001/02 Ethiopian Agricultural Sample Enumeration (EASE) was used as the sampling frame in order to select the primary sampling units (EAs). Consequently, all sample EAs were selected from this frame based on the design proposed for the survey. Resettlement localities, on the other hand, are sub-samples of the list of all resettlements localities obtained from each region. The second stage sampling units, households, were selected from a fresh list of households that were prepared for each EA/ resettlement localities at the beginning of the survey.

2.3 SAMPLE DESIGN

In order to select the sample a stratified two-stage cluster sample design was implemented. Enumeration areas (EAs) /resettlement localities were taken to be the primary sampling units (PSUs) and the secondary sampling units (SSUs) were agricultural households.

The sample size for the 2006/07 agricultural sample survey was determined by taking into account both the required level of precision for the most important estimates within each domain and the amount of resources allocated to the survey. In order to reduce non-sampling errors, manageability of the survey in terms of quality and operational control was also considered.

Except Harari, Addis Ababa and Dire Dawa, where each region as a whole was taken to be the domain of estimation; each zone of a region / special wereda was adopted as a stratum for which major findings of the survey are reported.

Moreover, values for the 2006/07 cultivated areas of crops and the expected amount of production for Gambella region are also provided. However, it is important to note that these values are not obtained from the survey but they are projections from the results of the 2003/04 annual Crop Production Forecast Sample Survey.

2.4 SELECTION SCHEME

Enumeration areas/resettlement localities from each stratum were selected systematically using probability proportional to size sampling technique; size being number of agricultural households. The sizes for EAs were obtained from the 1994 Population & Housing Census and adjusted for the sub-sampling effect. Sizes for resettlement localities on the other hand were obtained from the 2004 listings of resettlement localities. From the fresh list of households prepared at the beginning of the survey 20 agricultural households within each sample EA/resettlement locality were selected systematically.

Estimation procedure of totals, ratios, sampling error and the measurement of precision of estimates (CV) are given in Appendix I and II respectively. Distribution of sampling units (sampled and covered EAs and resettlement localities) by stratum is also presented in Appendix III.

2.5. ORGANIZATION OF FIELD WORK

The conduct of a survey cannot be executed without the arrangement of fieldwork. In recognition of this, the organization of fieldwork has been entrusted to the Department of Field Operations that liaises between the Head Office and the 25 Branch Statistical Offices spread across the regions. All Branch Offices took part in the survey execution especially in recruiting the enumerators, organizing the 2nd stage training, assigning the field staff to their sites of enumeration, supervising the data collection and retrieving completed questionnaires and submitting them to the Head Office for data processing.

The Branch Offices were also responsible for administering the financial and logistic aspects of the survey within their areas of operation. A total of 2388 enumerators, 455 field supervisors, 25 coordinators and 50 statisticians were involved in the data collection where on the average one supervisor was assigned to five enumeration areas for supervision of data collection. All the enumerators were supplied with the necessary survey equipment after the completion of the training to ensure the smooth

operation of the survey. To facilitate the data collection activities, a total of 205 four-wheel drive vehicles were used.

2.6. TRAINING OF FIELD STAFF

The execution of a survey and quality of data acquired from the survey highly depend on the type of training given to the enumerators and supervisors and the consequent understanding of the tasks to be performed and the standard procedures to be followed by the enumerators and supervisors in the survey undertaking. The quality and completeness of data are ensured when the training meets its objective of producing responsible and fervent enumerators and supervisors.

In light of this point, the training was given to the field staff in two stages. The first stage training, which took place at the Head Quarters of CSA and lasted 10 days targeted staff from the Head Office, statisticians and senior field supervisors from Branch Statistical Offices. The staff that took part in the first stage training was then assigned to conduct similar training for the enumerators and other supervisors for fifteen days in all the twenty- five Branch Statistical Offices, except in Gambella, distributed across the country.

In the training the field staff was given detailed classroom instruction on how to collect data, method of area measurement, interviewing procedures, etc. The training also included field practice to reinforce the understanding of concepts, definitions and theories discussed in the classroom with regard to field measurement, crop cutting and interviewing methods.

2.7. METHOD OF DATA COLLECTION

The agricultural data for the year 2006/07(1999 E.C) was collected from sedentary rural peasant households by interviewing the selected agricultural holders and physically measuring their fields to obtain data on crop yields and other items of interest.

The data obtained were recorded in various forms designed for this purpose. Instruments like measuring tape; compass, kitchen balance, scientific calculators and

others were used during data collection for a timely and smooth acquisition of accurate data. The procedures for measuring area under crop and area of non - crop fields operated by the holders were performed for the 30 selected households from each sampled E.A. using measuring tapes and compasses.

2.8. DATA PROCESSING

a) Editing ,Coding and Verification

Statistical data editing plays an important role in ensuring the quality of the collected survey data. It minimizes the effects of errors introduced while collecting data in the field, hence the need for data editing, coding and verification. Although coding and editing are done by the enumerators and supervisors in the field, respectively, verification of this task is done at the Head Office.

An editing, coding and verification instruction manual was prepared and reproduced for this purpose. Then 43 editors-coders and verifiers were trained for two days in editing, coding and verification using the aforementioned manual as a reference and teaching aid. The completed questionnaires were edited, coded and later verified on a 100 % basis before the questionnaires were passed over to the data entry unit. The editing, coding and verification exercise of all questionnaires took 35 days.

b) Data Entry, Cleaning and Tabulation

Before data entry, the Natural Resources and Agricultural Statistics Department of the CSA prepared edit specification for the survey for use on personal computers for data consistency checking purposes. The data on the edited and coded questionnaires were then entered into personal computers. The data were then checked and cleaned using the edit specifications prepared earlier for this purpose. The data entry operation involved about 60 data encoders and it took 75 days to finish the job. Finally, summarization of the data was done on personal computers to produce statistical tables as per the tabulation plan.

2.9. CONCEPTS AND DEFINITIONS

Data items of agriculture have to be distinctly defined and identified, so that the information about the items becomes useful. The correct way of stating data items and related terms is a prerequisite for making standards and definitions for the collection and compilation of agricultural data. The purpose of using standard concepts and definitions is not only to provide quality data but also to ensure that the right items are enumerated and measured accurately to reflect the agricultural situation.

Standard concepts and definitions used in the survey help to maintain consistent enumeration and measurement of variables of interest. To achieve this, CSA communicates concepts and definitions to the field staff through training and instruction manuals. The concepts and definitions used in the survey included the following.

Enumeration Area (E.A): an enumeration area in the rural parts of the country is a locality that is, in most of the cases less than, and only in some cases equal to a farmers' association in geographical area and usually consists of 150-200 households.

Household: a household may be either:

- a) a one person household, that is a person who makes provisions for his own living without combining with any other person to form part of a multi- person household or
- b) a multi-person household, that is, a group of two or more persons who live together and make common provisions for food and other essentials of living. The persons in the group may pool their incomes and have a common budget to a greater or lesser extent. They may be related or unrelated persons or a combination of both. These persons are taken as members of the household.

Agriculture: - The growing of crops and/or raising of animals for own consumption and /or sale.

Agricultural Household: - a household is considered an agricultural household when at least one member of the household is engaged in growing crops and/or raising livestock in private or in combination with others.

Holding: - a holding is all the land and /or livestock kept, which is used wholly or partly for agricultural production and is operated as one legal entity by one person alone, or with others with out regard to management, organization, size or location.

Holder: - a holder is a person who exercises management control over the operation of the agricultural holding and makes the major decision regarding the utilization of the available resources. He/she has primary technical and economic responsibility for the holding. He/she may operate the holding directly as an owner or a manager. Under conditions of traditional agricultural holding the holder may be regarded as the person, who with or with out the help of others, operates land and/or raises livestock in his/her own right, i.e. the person who decides on which, where, when, and how to grow crops or raise livestock or both and has the right to determine the utilization of the products.

Parcel: - a parcel of holding is any piece of land entirely surrounded by land and/or water and/or road and/or forest etc., which is not part of the holding. It may consist of one or more cadastral units, plots or fields adjacent to each other.

Field: - a field is defined as any plot of land which is a parcel or part of a parcel under the same or mixed crops or any other form of land use (private holding).

Crop: includes cereals, pulses, oilseeds, vegetables, root crops, fruits, coffee, Enset, Chat, hops, sugarcane, cotton, tobacco, etc produced for food, making drinks, stimulation and making fabrics or clothing.

Crop production: - the process of growing and harvesting of the above crops for own consumption and/or sale.

Temporary/Annual Crops: - Annual/temporary crops are crops, which are grown in less than a year's time, sometimes only a few months with an objective to sow or replant again for additional production following the current harvest. Continuously grown crops planted in rotation are also considered as temporary crops since each is harvested and destroyed by ploughing in preparation for each successive crop.

Permanent (Perennial) Crops: - Crops, which are grown and occupy land for a long period of time, not requiring replanting for several years after each harvest, are considered as permanent crops. All fruit trees (i.e. oranges, mandarin, bananas, etc) and trees for beverages (i.e. coffee, tea, hops (Gesho), etc) are considered permanent crops but meadows and pastures are excluded.

Meher (Main) Season Crop: - any temporary crop harvested between the months of Meskerm (September) and Yekatit (February) is considered as meher season crop.

Belg Season Crop: - any temporary crop harvested between the months of Megabit (March) and Pagume (August) is considered to be Belg Season Crop.

PART III

SUMMARY OF SURVEY RESULTS

3.1 AREA & PRODUCTION

By and large, agriculture in Ethiopia is subsistence. This is particularly true to the major food crops grown in the country and covered in the survey. The major food crops are produced in almost all regions of the country in spite of the variation in volume of production across the regions. The variation may be attributed to the extent of area devoted to each crop type, weather change and a shift in preference for the crops grown.

The food crops on which data is collected are the ones that are commonly grown by the majority of peasant holders. In the statistical tables these crops have been categorized into eight groups for simplicity of description and comparison purposes. The groups are cereals, pulses, oilseeds, vegetables, root crops, fruit crops, stimulant crops and sugar cane. Stimulant crops consist of Chat, coffee and hops.

3.1.1 Cereals: - these are the major food crops both in terms of the area they are planted to and volume of production obtained. They are produced in larger volume compared with other crops because they are the principal staple crops. Cereals are grown in all the regions with varying quantity as shown in the survey results. The data in Table 1 well underpin this finding of the survey.

Out of the total grain crop area, 79.98% (8.5million hectares) was under cereals. Teff, maize, wheat and sorghum took up 22.70% (2.4 million hectares), 16.00% (1.7 million hectares), 13.91% (nearly 1.5 million hectares) and 13.82% (nearly 1.5 million hectares) of the grain crop area, respectively. As to production, the tables paint similar picture as that of the area. Cereals contributed 86.12% (about 128.8 million quintals) of the grain production. Maize, wheat, Teff and sorghum made up 25.25%

(37.8 million quintals), 16.47% (24.6 million quintals), 16.30% (24.4 million quintals) and 15.49% (23.2 million quintals) of the grain production in the same order.

Fig. 1 Area Under Crops, 2006/07 (1999 E.C)

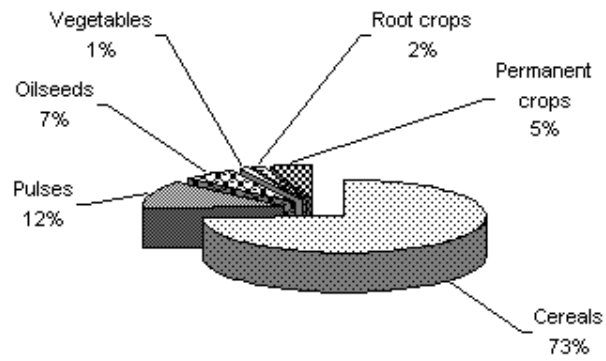
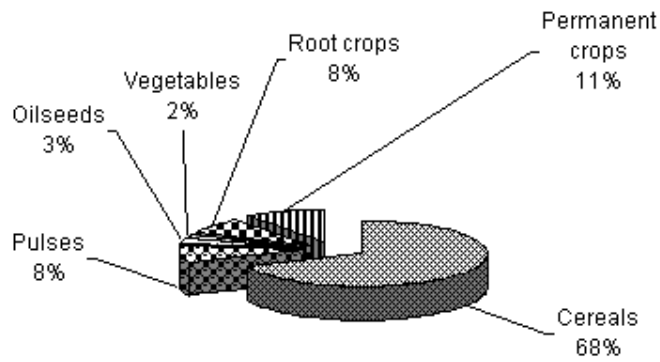


Fig. 2 Production of Crops, 2006/07 (1999 E.C)



3.1.2 Pulses: - The survey results show that the private peasant holders grow various crops for own consumption and/ or economic benefits. Pulses are also among the various crops produced in all the regions of the country after cereals. Pulses are grown in different volumes across the country as indicated in Table 1.

Pulses grown in 2006 / 07 (1999 E.C) covered 13.02% (nearly 1.4 million hectares) of the grain crop area and 10.56% (more than 15.8 million quintals) of the grain production was drawn from the same crops. Faba beans, haricot beans, and field peas were planted to 4.34% (more than 459 thousand hectares), 2.11% (223 thousand hectares) and 2.09% (about 222 thousand hectares) of the grain crop area. The production obtained from faba beans, chick-peas, and haricot beans was 3.85% (about 5.8 million), 1.70% (2.5 million) and 1.49% (2.2 million) quintals of the grain production, in that order.

3.1.3 Oilseeds: - these are crops grown to flavour the food consumed at home and earn some cash for peasant holders in the country. Various oil crops are produced in all the regions with differing quantity as illustrated in the survey results. Table 1 underscores this point in detail.

Oilseeds added 7.00% (about 742 thousand hectares) of the grain crop area and 3.32% (about 5 million quintals) of the production to the national grain total. Neug, sesame and linseed covered 2.59% (about 275 thousand hectares), 1.99% (more than 211 thousand hectares) and 1.64% (more than 174 thousand hectares) of the grain crop area and 0.99% (about 1.5 million quintals), 1% (about 1.5 million quintals) and 0.72% (more than one million quintals) of the grain production.

3.1.4 Vegetables- holders living near to urban centres largely practice vegetable farming. Most vegetables are not commonly practiced by the rural private peasant holders, hence the small volume of production recorded as well evidenced by the survey results. Statistical Table 1 underlines this more in the report.

Vegetables took up 0.84% of the area under all crops at national level. Of all the area under vegetables 59.74% and 24.62% was under red peppers and Ethiopian Cabbage, respectively. As to production of vegetables, 29.47% and 46.13% was that of the same crops, in that order.

3.1.5 Root Crops - Some root crops like onion and garlic are indispensable to improve the taste and scent of the food we eat. Others like potatoes, sweet potatoes and taro/ Godere are among the list of major food crops that are consumed across the country. These and other economic importances prompt the peasant holders to grow many of the root crops as shown in the survey results. Table 1 substantiates this point in more details.

Root crops covered more than 1.66% of the area under all crops in the country. Potatoes, sweet potatoes and taro ('Godere') added 38.59%, 28.14% and 15.69% of the area to the root crop total. The same crops and onion contributed 37.29%, 27.58%, 16.12% and 12.66% to the root crop production total in the same order.

3.1.6 Fruit Crops – The survey results show that fruit crops grown by the private peasant holders cover only a small token area and production in the country. The number of holders practicing fruit farming is much less than that of grains or cereals as indicated in the tables.

More than 50 thousand hectares of land is under fruit crops in Ethiopia. Bananas contributed about 60.77% of the fruit crop area followed by mangoes that contributed 13.57% of the area. Nearly 4.6 million quintals of fruits was produced in the country. Bananas, Papayas, mangoes and oranges took up 49.55%, 15.99%, 13.61% and 10.13% of the fruit production, respectively, as shown in Table 1.

3.1.7 Stimulant crops – Farmers engaged in growing and producing stimulant crops such as coffee and Chat are greater in number than those growing fruits. The area and production of these crops are also larger than that of fruits since they earn a considerable amount of cash for the holders. Table 1 shows Chat and coffee shared 1.30% and 2.59% of the area under all crops in the country and 1.5 and 2.4 million quintals of produce was obtained from these crops in the same agricultural year respectively.

3.1.8 Sugar Cane- is grown in small areas in some parts of the country within the private peasant holdings. More than 17 thousand hectares of land was under sugar cane in the country, yielding more than 11 million quintals of produce by the peasant holders. But the production is not usually used for industrial purposes. It is noticeably used up in household consumption.

